

What is claimed is:

- 1 1. A method for use in a mobile communications network, comprising:
2 defining a band of carrier frequencies for the mobile communications
3 network;
4 for a first cell segment, allocating one of the carrier frequencies in the
5 band for communicating beacon control signaling; and
6 for another cell segment, allocating the one of the carrier frequencies to
7 carry bearer traffic.
- 1 2. The method of claim 1, further comprising allocating a plurality of carrier
2 frequencies to the first cell segment,
3 wherein the one carrier frequency for communicating beacon control
4 signaling is part of the plurality of carrier frequencies allocated to the first cell segment.
- 1 3. The method of claim 2, further comprising:
2 defining a hopping sequence among the allocated plurality of carrier
3 frequencies; and
4 excluding the one carrier frequency for communicating beacon control
5 signaling from the hopping sequence.
- 1 4. The method of claim 3, further comprising communicating traffic channels
2 carrying the bearer traffic on carrier frequencies assigned according to the hopping
3 sequence.
- 1 5. The method of claim 4, further comprising constantly communicating the
2 beacon control signaling at the one carrier frequency.
- 1 6. The method of claim 3, further comprising providing a fractional reuse
2 pattern in the mobile communications network.

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1 7. The method of claim 6, further comprising using, in each cell segment, a
2 fraction that is less than all of the allocated carrier frequencies at any one time.

1 8. The method of claim 1, wherein allocating the one carrier frequency for
2 communicating beacon control signaling comprises allocating the one carrier frequency
3 for communicating a broadcast control channel.

1 9. The method of claim 8, wherein defining the band of carrier frequencies
2 for the mobile communications network comprises defining the band of carrier
3 frequencies for at least one of the following networks: a Global System for Mobile
4 (GSM) network; a General Packet Radio Service (GPRS) network; an Enhanced GPRS
5 (EGPRS) network; and a Global System for Mobile/Enhanced Data Rate for Global
6 Evolution Radio Access Network (GERAN).

1 10. The method of claim 1, further comprising providing a fractional reuse
2 pattern in the mobile communications network.

1 11. The method of claim 10, wherein providing the fractional reuse pattern
2 comprises providing one of a 1x3 fractional reuse pattern and a 1x1 fractional reuse
3 pattern.

1 12. An article comprising at least one storage medium containing instructions
2 for providing communications in a mobile communications network having a band of
3 carrier frequencies, the instructions when executed causing a system to:
4 assign, to a first cell segment, a first carrier frequency for communicating
5 beacon control signaling from the band of carrier frequencies; and
6 assign, to another cell segment, the first carrier frequency to communicate
7 traffic channels.

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1 13. The article of claim 12, wherein the instructions when executed cause the
2 system to further assign a group of carrier frequencies to the first cell segment, the group
3 comprising the first carrier frequency.

1 14. The article of claim 13, wherein the instructions when executed cause the
2 system to exclude the first carrier frequency from communicating traffic channels in the
3 first cell segment.

1 15. The article of claim 14, wherein the instructions when executed cause the
2 system to further define a hopping sequence for the first cell segment among the group of
3 carrier frequencies, the hopping sequence excluding the first carrier frequency.

1 16. The article of claim 15, wherein the instructions when executed cause the
2 system to further exclude carrier frequencies used for beacon control signaling in
3 neighboring cell segments of the first cell segment from the hopping sequence.

1 17. The article of claim 15, wherein the instructions when executed cause the
2 system to further assign a fractional reuse pattern to the mobile communications network.

1 18. The article of claim 12, wherein the beacon control signaling comprises a
2 broadcast control channel.

1 19. The article of claim 18, wherein the mobile communications network is
2 selected from the group consisting of: a Global System for Mobile (GSM) network; a
3 General Packet Radio Service (GPRS) network; an Enhanced GPRS (EGPRS) network;
4 and a Global System for Mobile/Enhanced Data Rate for Global Evolution Radio Access
5 Network (GERAN).

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1 20. A system controller, comprising:
2 an interface to communicate with cell site equipment of a mobile
3 communications network; and
4 a processor adapted to assign carrier frequencies from an entire available
5 band of carrier frequencies to cell segments,
6 the processor adapted to assign, to a first cell segment, a first carrier
7 frequency to carry beacon control signaling, the first carrier frequency selected from the
8 entire available band of carrier frequencies,
9 the processor adapted to assign, to another cell segment, the first carrier
10 frequency to carry bearer traffic.

1 21. The system controller of claim 20, wherein the processor is adapted to
2 assign a plurality of carrier frequencies to the first cell segment, the plurality of carrier
3 frequencies comprising the first carrier frequency,
4 the processor is adapted to further define a hopping sequence for the
5 traffic channels in the first cell segment,
6 the hopping sequence including the plurality of carrier frequencies but
7 excluding the first carrier frequency.

1 22. The system controller of claim 21, wherein the processor is adapted to
2 define a fractional reuse pattern for the mobile communications network.

1 23. The system controller of claim 20, wherein the beacon control signaling
2 comprises a broadcast control channel of a Global System for Mobile (GSM) mobile
3 communications network.

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